

WHAT IS CLAIMED IS:

1. An isolated nucleic acid molecule encoding a BEL transcription factor from *Solanum tuberosum*.

5 2. The isolated nucleic acid molecule according to claim 1, wherein the nucleic acid molecule has a nucleotide sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, and SEQ ID NO:13.

10 3. The isolated nucleic acid molecule according to claim 1, wherein the nucleic acid sequence encodes a protein that is at least 85% similar to a homeodomain region, a SKY box, a BELL domain, and a VSLTLGL-box in either SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14 by basic BLAST using default
15 parameters analysis.

4. The isolated nucleic acid molecule according to claim 1, wherein the nucleic acid molecule hybridizes to the nucleotide sequence of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, or SEQ ID NO:13 under stringent conditions characterized by a
20 hybridization buffer comprising 5X SSC at a temperature of 55°C.

25 5. The isolated nucleic acid molecule according to claim 1, wherein the nucleic acid molecule encodes a protein or polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, and SEQ ID NO:14.

30 6. The isolated nucleic acid molecule according to claim 2, wherein the nucleic acid molecule encodes a protein or polypeptide having a molecular mass of about 56 kDa to about 76 kDa.

7. A DNA construct comprising:
the nucleic acid molecule according to claim 1, and
an operably linked promoter and 3' regulatory region.

5 8. An expression vector comprising the DNA construct of
claim 7.

9. The expression vector according to claim 8, wherein the
nucleic acid molecule is in proper sense orientation and correct reading frame.

10 10. A host cell transduced with the nucleic acid molecule
according to claim 1.

11. The host cell according to claim 10, wherein the cell is
selected from the group consisting of a bacterial cell, a virus, a yeast cell, an insect
cell, a plant cell, and a mammalian cell.

12. A transgenic plant transformed with the nucleic acid
molecule according to claim 1.

20 13. The transgenic plant according to claim 12, wherein the
nucleic acid molecule has a nucleotide sequence selected from the group
consisting of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ
ID NO:9, SEQ ID NO:11, and SEQ ID NO:13.

25 14. The transgenic plant according to claim 12, wherein the
nucleic acid sequence encodes a protein that is at least 85% similar to a
homeodomain region, a SKY box, a BELL domain, and a VSLTLGL-box in
either SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, SEQ ID
NO:10, SEQ ID NO:12, or SEQ ID NO:14 by basic BLAST using default
parameters analysis.

15. The transgenic plant according to claim 12, wherein the nucleic acid molecule hybridizes to the nucleotide sequence of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, or SEQ ID NO:13 under stringent conditions characterized by a hybridization buffer
5 comprising 5X SSC at a temperature of 55°C.

16. The transgenic plant according to claim 12, wherein the nucleic acid molecule encodes a protein or polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO:2, SEQ ID NO:4,
10 SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, and SEQ ID NO:14.

17. The transgenic plant according to claim 12, wherein the nucleic acid molecule encodes a protein or polypeptide having a molecular mass
15 of about 56 kDa to about 76 kDa.

18. The transgenic plant according to claim 12, wherein the plant is selected from the group consisting of Gramineae, Liliaceae, Iridaceae, Orchidaceae, Salicaceae, Ranunculaceae, Magnoliaceae, Cruciferae, Rosaceae,
20 Leguminosae, Malvaceae, Umbelliferae, Labiate, Solanaceae, Cucurbitaceae, Compositae, and Rubiaceae.

19. A transgenic plant seed transformed with the nucleic acid molecule according to claim 1.
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20. The transgenic plant seed according to claim 19, wherein the nucleic acid molecule has a nucleotide sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, and SEQ ID NO:13.

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21. The transgenic plant seed according to claim 19, wherein the nucleic acid sequence encodes a protein that is at least 85% similar to a homeodomain region, a SKY box, a BELL domain, and a VSLTLGL-box in

either SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14 by basic BLAST using default parameters analysis.

5 22. The transgenic plant seed according to claim 19, wherein
the nucleic acid molecule hybridizes to the nucleotide sequence of SEQ ID NO:1,
SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, or
SEQ ID NO:13 under stringent conditions characterized by a hybridization buffer
comprising 5X SSC at a temperature of 55°C.

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23. The transgenic plant seed according to claim 19, wherein
the nucleic acid molecule encodes a protein or polypeptide comprising an amino
acid sequence selected from the group consisting of SEQ ID NO:2, SEQ ID NO:4,
SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, and SEQ ID
15 NO:14.

24. The transgenic plant seed according to claim 19, wherein the nucleic acid molecule encodes a protein or polypeptide having a molecular mass of about 56 kDa to about 76 kDa.

20 25. The transgenic plant seed according to claim 19, wherein
the plant seed is selected from the group consisting of Gramineae, Liliaceae,
Iridaceae, Orchidaceae, Salicaceae, Ranunculaceae, Magnoliaceae, Cruciferae,
Rosaceae, Leguminosae, Malvaceae, Umbelliferae, Labiatae, Solanaceae,
25 Cucurbitaceae, Compositae, and Rubiaceae.

26. A method for enhancing tuber development in a plant comprising:

30 comprising: transforming a tuberous plant with a first DNA construct

a first nucleic acid molecule encoding a BEL transcription factor or a KNOX transcription factor, and

a first operably linked promoter and first 3' regulatory region,
whereby tuber development in the plant is enhanced.

5 27. The method according to claim 26, wherein the first nucleic acid molecule encodes a BEL transcription factor.

10 28. The method according to claim 27, wherein the BEL transcription factor is from *Solanum tuberosum*.

15 29. The method according to claim 28, wherein the first nucleic acid molecule has a nucleotide sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, and SEQ ID NO:13.

15 30. The method according to claim 28, wherein the first nucleic acid molecule encodes a protein that is at least 85% similar to a homeodomain region, a SKY box, a BELL domain, and a VSLTLGL-box in either SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14 by basic BLAST using default parameters analysis.

25 31. The method according to claim 28, wherein the first nucleic acid molecule hybridizes to the nucleotide sequence of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, or SEQ ID NO:13 under stringent conditions characterized by a hybridization buffer comprising 5X SSC at a temperature of 55°C.

30 32. The method according to claim 28, wherein the first nucleic acid molecule encodes a protein or polypeptide comprising an amino acid sequence selected from the group consisting of SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, and SEQ ID NO:14.

33. The method according to claim 28, wherein the first nucleic acid molecule encodes a protein or polypeptide having a molecular mass of about 56 kDa to about 76 kDa.

5 34. The method according to claim 26, wherein the first nucleic acid molecule encodes a KNOX transcription factor.

35. The method according to claim 34, wherein the KNOX transcription factor is from *Solanum tuberosum*.

10 36. The method according to claim 35, wherein the first nucleic acid molecule has a nucleotide sequence of SEQ ID NO:16.

15 37. The method according to claim 35, wherein the first nucleic acid molecule hybridizes to the nucleotide sequence of SEQ ID NO:16 under stringent conditions characterized by a hybridization buffer comprising 5X SSC at a temperature of 55°C.

20 38. The method according to claim 35, wherein the first nucleic acid molecule encodes a protein or polypeptide having an amino acid sequence of SEQ ID NO:17.

25 39. The method according to claim 26, wherein the first DNA construct comprises a first nucleic acid molecule encoding a BEL transcription factor and a second nucleic acid molecule encoding a KNOX transcription factor.

30 40. The method according to claim 39, wherein the BEL transcription factor and the KNOX transcription factor are from *Solanum tuberosum*.

41. The method according to claim 26, wherein the first nucleic acid molecule encodes a BEL transcription factor and the method further comprises:

transforming the tuberous plant with a second DNA construct comprising:

a second nucleic acid molecule encoding a KNOX

transcription factor, and

5 a second operably linked promoter and second 3' regulatory region.

42. The method according to claim 26, wherein the tuberous plant is selected from the group consisting of potato, wild potato, dahlia, 10 caladium, Jerusalem artichoke, yam, sweet potato, cassava, tuberous begonia, and cyclamen.

43. A method for enhancing growth in a plant comprising:
transforming a plant with a DNA construct comprising:

15 a nucleic acid molecule encoding a BEL transcription factor from *Solanum tuberosum*, and
an operably linked promoter and 3' regulatory region,
whereby growth in the plant is enhanced.

20 44. The method according to claim 43, wherein the nucleic acid molecule has a nucleotide sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, and SEQ ID NO:13.

25 45. The method according to claim 43, wherein the nucleic acid molecule encodes a protein that is at least 85% similar to a homeodomain region, a SKY box, a BELL domain, and a VSLTLGL-box in either SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14 by basic BLAST using default parameters analysis.

30 46. The method according to claim 43, wherein the nucleic acid molecule hybridizes to the nucleotide sequence of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, or SEQ ID NO:13

under stringent conditions characterized by a hybridization buffer comprising 5X SSC at a temperature of 55°C.

47. The method according to claim 43, wherein the nucleic acid
5 molecule encodes a protein or polypeptide comprising an amino acid sequence
selected from the group consisting of SEQ ID NO:2, SEQ ID NO:4, SEQ ID
NO:6, SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, and SEQ ID NO:14.

48. The method according to claim 43, wherein the first nucleic
10 acid molecule encodes a protein or polypeptide having a molecular mass of about
56 kDa to about 76 kDa.

49. The method according to claim 43, wherein the plant is
selected from the group consisting of Gramineae, Liliaceae, Iridaceae,
15 Orchidaceae, Salicaceae, Ranunculaceae, Magnoliaceae, Cruciferae, Rosaceae,
Leguminosae, Malvaceae, Umbelliferae, Labiatae, Solanaceae, Cucurbitaceae,
Compositae, and Rubiaceae.

50. A method for regulating flowering in a plant comprising:
20 transforming a plant with a DNA construct comprising:
a nucleic acid molecule encoding a BEL transcription factor
from *Solanum tuberosum*, and
an operably linked promoter and 3' regulatory region,
whereby flowering in the plant is regulated.

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51. The method according to claim 50, wherein the nucleic acid
molecule has a nucleotide sequence selected from the group consisting of SEQ ID
NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID
NO:11, and SEQ ID NO:13.

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52. The method according to claim 50, wherein the nucleic acid
molecule encodes a protein that is at least 85% similar to a homeodomain region,
a SKY box, a BELL domain, and a VSLTLGL-box in either SEQ ID NO:2, SEQ

ID NO:4, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14 by basic BLAST using default parameters analysis.

53. The method according to claim 50, wherein the nucleic acid
5 molecule hybridizes to the nucleotide sequence of SEQ ID NO:1, SEQ ID NO:3,
SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, or SEQ ID NO:13
under stringent conditions characterized by a hybridization buffer comprising 5X
SSC at a temperature of 55°C.

10 54. The method according to claim 50, wherein the nucleic acid
molecule encodes a protein or polypeptide comprising an amino acid sequence
selected from the group consisting of SEQ ID NO:2, SEQ ID NO:4, SEQ ID
NO:6, SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, and SEQ ID NO:14.

15 55. The method according to claim 50, wherein the first nucleic
acid molecule encodes a protein or polypeptide having a molecular mass of about
56 kDa to about 76 kDa.

20 56. The method according to claim 50, wherein the plant is
selected from the group consisting of Gramineae, Liliaceae, Iridaceae,
Orchidaceae, Salicaceae, Ranunculaceae, Magnoliaceae, Cruciferae, Rosaceae,
Leguminosae, Malvaceae, Umbelliferae, Labiate, Solanaceae, Cucurbitaceae,
Compositae, and Rubiaceae.

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